

WHAT IS CLAIMED IS:

1. A control apparatus for an automatic transmission, which executes a neutral control by which an input clutch that transmits driving force from a driving source to the automatic transmission is released when conditions, being i) a shift lever is in a position corresponding to a forward speed range, ii) an accelerator operation is not being performed, iii) a brake operation is being performed, and iv) a vehicle speed is equal to, or less than, a predetermined vehicle speed, are fulfilled, the control apparatus comprising:

a controller which detects a road gradient and outputs a command to release the input clutch when i) the detected road gradient is equal to, or less than, a predetermined value, and ii) the conditions are fulfilled,

wherein, after the command has been output, the controller compares the detected road gradient and the predetermined value and cancels the output of the command if the road gradient is greater than the predetermined value.

2. The control apparatus for an automatic transmission according to claim 1, wherein the predetermined value is a value indicating that the vehicle is not on an incline.

3. The control apparatus for an automatic transmission according to claim 1, wherein the controller detects the road gradient using an acceleration sensor, the acceleration sensor outputting a true road gradient after a first period of time which is a delay due to data processing of data indicative of the detected road gradient, and generates the command so that the input clutch will be completely released after a second period of time, which is longer than the first period of time, has passed after the command has been output from the controller.

4. The control apparatus for an automatic transmission according to claim 3, wherein the controller outputs the command to release the input clutch immediately when the detected road gradient is equal to, or less than, the predetermined value and the conditions are fulfilled.

5. The control apparatus for an automatic transmission according to claim 1, wherein the controller outputs the command to release the input clutch immediately when the

detected road gradient is equal to, or less than, the predetermined value and the conditions are fulfilled.

5 6. The control apparatus for an automatic transmission according to claim 1, wherein a torque converter is provided between the driving source and the automatic transmission.

10 7. The control apparatus for an automatic transmission according to claim 1, wherein power from the driving source is transmitted to the automatic transmission via the driving source, the torque converter, and the input clutch.

15 8. A control method for an automatic transmission, by which is executed a neutral control by which an input clutch that transmits driving force from a driving source to the automatic transmission is released when conditions, being i) a shift lever is in a position corresponding to a forward speed range, ii) an accelerator operation is not being performed, iii) a brake operation is being performed, and iv) a vehicle speed is equal to, or less than, a predetermined vehicle speed, are fulfilled, the control method comprising the steps of:

detecting a road gradient;

20 outputting a command to release the input clutch when i) the detected road gradient is equal to, or less than, a predetermined value, and ii) the conditions are fulfilled; and

25 after the command has been output, comparing the detected road gradient and the predetermined value and canceling the output of the command if the road gradient is greater than the predetermined value.

9. The control method for an automatic transmission according to claim 8, wherein the predetermined value is a value indicating that the vehicle is not on an incline.

30 10. The control method for an automatic transmission according to claim 8, further comprising the steps of:

outputting a true road gradient after a first period of time; and

releasing the input clutch after a second period of time, which is longer than the first period of time, has passed after the command to release the input clutch has been

output.

11. The control method for an automatic transmission according to claim 10, further comprising the step of:

5 outputting the command to release the input clutch immediately when the detected road gradient is equal to, or less than, the predetermined value and the conditions are fulfilled.

12. The control method for an automatic transmission according to claim 8, further
10 comprising the step of:

 outputting the command to release the input clutch immediately when the detected road gradient is equal to, or less than, the predetermined value and the conditions are fulfilled.

13. The control method for an automatic transmission according to claim 8, wherein a
15 torque converter is provided between the driving source and the automatic transmission.

14. The control method for an automatic transmission according to claim 8, wherein
20 power from the driving source is transmitted to the automatic transmission via the driving source, the torque converter, and the input clutch.